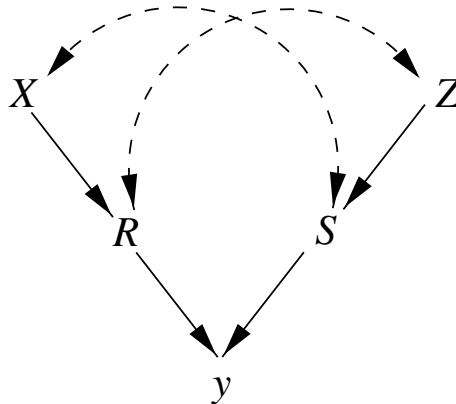


# HOMWORK #5

## CS262Z

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Consider the following semi-Markovian model



1. Test, using do-calculus, whether the causal effect  $P(y|do(x), do(z))$  is identifiable. If the answer is yes, provide an expression for  $P(y|do(x), do(z))$ . If the answer is no, prove it directly.
2. List the causal effects that are identifiable in the model above. State your reasoning for each.
3. Can you think of a real-life problem having this structure?
4. Prove explicitly that  $P(y|do(x))$  is not identified in the model of Figure 3.7(a).
5. Prove Eq. (3.49) using *do*-calculus.